# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/042,528 | 10/18/2001 | Andrew William Mackie | 2639/A36 | 7291 |

2101          7590          06/30/2008
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| EXAMINER |
|---|
| JACKSON, JAKIEDA R |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2626 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 06/30/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| | Application No. | Applicant(s) |
| --- | --- | --- |
| **Office Action Summary** | 10/042,528 | MACKIE, ANDREW WILLIAM |
| | Examiner | Art Unit |
| | JAKIEDA R. JACKSON | 2626 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on _10 April 2008_.
2a)☐ This action is **FINAL**.        2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _1-9 and 11-15_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☒ Claim(s) _3-9 and 11-13_ is/are allowed.
6)☒ Claim(s) _1-2 and 14-15_ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All  b)☐ Some * c)☐ None of:
    1.☐ Certified copies of the priority documents have been received.
    2.☐ Certified copies of the priority documents have been received in Application No. _____.
    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1.      In response to the Office Action mailed December 10, 2007, applicant submitted

an amendment filed on April 10, 2008, in which the applicant traversed and requested

reconsideration.


### *Response to Arguments*

2.      Applicant argues that the prior art cited does not teach the claim phrase

"traversing substrings of the natural language input in an order determined by the

weights assigned to the breakpoints.  Applicant argues that the Shapiro reference

teaches a search engine for conducting searches.  Words in a search query are ordered

according to importance, determined by the frequency of use of the word in the

database.  Such use of weighting to conduct a search has absolutely no relation to the

Applicant's invention for segmenting compound words in an unrestricted natural

language input.  However, in response to applicant's argument that weighting to conduct

a search has absolutely no relation to the Applicant's invention for segmenting

compound words in an unrestricted natural language input, the fact that applicant has

recognized another advantage which would flow naturally from following the suggestion

of the prior art cannot be the basis for patentability when the differences would

otherwise be obvious.  See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter.

1985).  However, the Examiner has reconsidered the Shapiro reference as a whole and

has withdrawn the rejection; however the claims are rejected in view of new grounds of

rejections.  McKeown discloses a method of assigning a predefined segmentation

weight (column 6, lines 51-57) and also uses a segment significance module using a

sequential approach for determining segment importance and coverage (column 8, lines

24-49).


### *Claim Rejections - 35 USC § 103*

3.      The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.      **Claims 1-2 and 14-15** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Carcus et al. (USPN 6,035,268) hereinafter referenced as Carcus in

view of McKeown et al. (USPN 9,473,730), hereinafter referenced as McKeown and in

further view of Matsubayashi et al. (USPN 6,473,754), hereinafter referenced as

Matsubayashi.


        Regarding **claim 1**, Carcus discloses a method for segmenting compound words

in an unrestricted natural-language input, the method comprising:

        receiving a natural-language input (natural language) consisting of a plurality of

characters (receiving stream of input text; compound word; column 1, line 19 –column

7, line 18);

constructing a set of probabilistic breakpoints in the natural-language input based

on probabilistic breakpoint analysis (statistical analysis; column 1, line 19 –column 7,

line 18);

identifying a plurality of linkable components by traversal of substrings of the

natural-language (natural language) input delimited by the set of probabilistic

breakpoints (word breaks) wherein a linkable component (link) is identified by locating

the component in a lexicon (lexicon; column 1, line 19 –column 7, line 18); and

returning a segmented string consisting of a plurality of linkable components

spanning (spanning) the natural-language input, wherein the segmented string is

interpreted as a compound word (compound word; column 1, line 19 –column 7, line

18), but does not specifically teach assigning weights to the breakpoints in the natural-

language input and traversing substrings of the natural-language input in an order

determined by the weights assigned to the breakpoints and combining a probability.

McKeown discloses a method wherein assigning weights to the breakpoints

(assigns a predefined segmentation weight; column 6, lines 51-57) in the natural-

language input (natural language; column 1, lines 38-50) and traversing substrings of

the natural-language input in an order determined by the weights assigned to the

breakpoints (sequential approach for determining segment importance and coverage;

column 8, lines 24-49), to efficiently and accurately identify segment.

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Carcus' method wherein it is described as

above, to provide a method that segments information according to the segment

function and the importance, for efficient and accurate segmentation (column 1, lines 29-35).

Carcus in view McKeown discloses a method of segmenting compound words, but does not specifically teach combining a probability that characters preceding each breakpoint end a word and a probability that characters following the breakpoint start a word to assign weights to the breakpoints in the natural-language input.

Matsubayashi discloses a method of combining a probability that characters preceding each breakpoint (probability of division) end a word (tail-position) and a probability that characters following the breakpoint start a word (head-position) to assign weights to the breakpoints in the natural-language input (column 3, line 41 – column 4, line 41 and column 15, lines 47-56 and column 16, line 65 - column 17, line10 with column 20, lines 27-53), to extract characteristic string with less erroneous division.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Carcus in view of McKeown's method wherein it combines a probability, as taught by Matsubayashi, to extract characteristic string with less erroneous division and this less search noise to realize searching of a relevant document or documents with less shift from the main concept of a seed document (column 5, lines 26-35).

Regarding **claim 2**, Carcus discloses a method further including the step of analyzing a chart of the linkable components in the case that the segmented string cannot be constructed and returning an unsegmented string interpretable as a partial

analysis of a compound word (removed from the word breaker; column 1, line 19 –

column 7, line 18 and column 36-54).

Regarding **claim 14**, it is interpreted and rejected for the same reasons as set for

h in claim 1. In addition, Carcus discloses a method wherein assigning weights

comprises combining weights of contexts of one length that precede a breakpoint and of

contexts of a different length that follow the breakpoint (inherent in parsing; column 1,

paragraphs 0010-0011 and column 2, paragraph 0023).

Regarding **claim 15**, it is interpreted and rejected for the same reasons as set

forth in claim 1. In addition, Carcus discloses a method wherein assigning weights

comprises weighting weights of a plurality of context of different lengths that precede

and follow a breakpoint (inherent in parsing; column 1, paragraphs 0010-0011 and

column 2, paragraph 0023).

*Allowable Subject Matter*

5.      Claims 3-9 and 11-13 are allowed.

The following is a statement of reasons for allowance:

As for independent claim 3, it recites an apparatus for segmenting compound

words in a natural-language input. Prior art such as Franz show a similar configuration

but fails to teach the recited configuration wherein a probabilistic breakpoint analyzer is

coupled to the startpoint probability matrix, the endpoint probability matrix and the

natural-language input, the probabilistic breakpoint analyzer being operative to generate

a breakpoint-annotated input from the natural-language input.

Dependent claims 4-9 are allowed because they further limit their parent claims.

As for independent claim 11, it recites an apparatus for segmenting compound words in an unrestricted natural-language input. Prior art such as Carcus, Shapiro and Matsubayashi show a similar method but fails to teach the recited method of combining weights of trigraph context that precede and follow each breakpoint to assign a weight to the breakpoint in the natural-language input in combination with the other limitations.

As for independent claim 12, it recites an apparatus for segmenting compound words in an unrestricted natural-language input. Prior art such as Carcus, Shapiro and Matsubayashi show a similar method but fails to teach the recited method of combining weights of bigraph context that precede and follow each breakpoint to assign a weight to the breakpoint in the natural-language input in combination with the other limitations.

As for independent claim 13, it recites an apparatus for segmenting compound words in an unrestricted natural-language input. Prior art such as Carcus, Shapiro and Matsubayashi show a similar method but fails to teach the recited method of combining weights of tetragraph context that precede and follow each breakpoint to assign a weight to the breakpoint in the natural-language input in combination with the other limitations.

## Conclusion

6.      Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAKIEDA R. JACKSON whose telephone number is (571)272-7619.  The examiner can normally be reached on Monday-Friday from 5:30am-2:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRJ
June 23, 2008
/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626